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cussed by Dr. Stejneger in the *American Naturalist* (1901, vol. 25, p. 87-116) has been followed by another book upon the same subject.¹ The problem of animal distribution is simply and clearly presented by means of outline maps on which the occurrence of a single species is plotted in black; in an unoccupied corner of each chart a picture of the animal is inserted. In a few cases the former land areas have also been indicated. Thus Fig. 6 shows a fresh water lake in place of the Irish Sea, from which the fresh water herrings (*Coregonus*) travelled up the streams to lakes in northern Ireland and western England and Scotland, where they are now isolated. Some of the charts deal with the distribution of plants, which are "subject to the same laws of dispersal as animals." Although "the occasional transport of species by wind or by marine currents has probably taken place sometimes," Dr. Scharff believes that it does not effect the constitution of an island fauna very materially. Twice he cites evidence that birds during migration do not have seeds in their crops or adhering to their bodies. Distribution is to be explained chiefly by geographical changes, and leads to such conclusions as that the Azores were not connected by land with America but only with Europe. The Canary Islands, however, "must have formed part of the land which connected Africa with America, in early Tertiary times."

Dr. Scharff believes that there was no "exceptional destruction" of the British fauna and flora during the glacial period. He is of the opinion that "the whole of the existing Irish fauna is of pre-glacial age" and that "a more uniformly humid climate of Europe may have favored the production of glaciers without decreasing the temperature." The criticisms of this hypothesis by Dr. Stejneger and others are noted by Dr. Scharff. The book is an admirable presentation of the purpose and importance of studies in animal and plant distribution.

The Dancing Mouse.²—Current publications have been so occupied with presenting and discussing faulty accounts of animal behavior that the public is scarcely aware of a science dealing with this subject. In a well written book entitled *The Dancing Mouse* Dr. Yerkes presents the methods and some of the results of this study. The dancing mouse, as described in the first chapters, is a domesticated animal of

¹ Scharff, R. F. European animals: their geological history and geographical distribution. New York, E. P. Dutton & Co., 1907. xiv+258 pp., 70 figs. \$2.50.

² Yerkes, R. M. The dancing mouse. A study in animal behavior. New York. The Macmillan Company, 1907. xxi+290 pp., 33 figs. \$1.25.

unknown origin, characterized by its inability to move far in a straight line without whirling or circling about with extreme rapidity. Its action may be compared with that of a cat in chasing its tail and regarded as an aimless, useless habit increased by the breeder's selection; or it may be considered an abnormal condition. Since this mouse cannot be made dizzy by any contrivance, it has been described as anatomically defective, but according to Dr. Yerkes the anatomical defects are not established and he "can see no satisfactory grounds for considering the dancer either abnormal or pathological."

The larger part of the book describes experiments with ingenious apparatus devised by the author for testing hearing, vision, educability, habit formation, efficiency of training methods, duration of habits, individual differences in behavior, and the inheritance of behavior. It is found that the dancing mouse, although able to squeak and capable of ear movements as if listening, is totally deaf except, in some instances, during the third week of life. The experiments indicate "that brightness vision is fairly acute, that color vision is poor, that although form is not clearly perceived, movement is readily perceived." The dancing mice learn some things of their own initiative, as how to use a swinging door which must be pushed on one side and pulled on the other; they are not helped by seeing other mice perform an act, but are aided by being put through it themselves. Certain acquired habits were remembered after from two to eight weeks of disuse; if forgotten, re-learning was easier. Initiative did not decrease with age up to eighteen months, the oldest studied. "Frequently my oldest mice have shown themselves preeminent in their ability to adjust their behavior to new conditions." Absolutely no evidence was found of the inheritance of an acquired habit, which in the case studied was beneficial to the animal.

These valuable studies in the mental life of the dancing mouse were accomplished without resort to vivisection. In place of depriving the mouse of its various senses, the apparatus was arranged so that they became inoperative. In methods as in results the work is highly commendable, and it has been awarded the Cartwright Prize of the Alumni Association of the College of Physicians and Surgeons, New York.

F. T. LEWIS.